

Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (previously presented) A system for creating an output video production automatically from a body of input video material comprising multiple segments, said system including:

computerized digital signal processing means for automatically performing one or more digital signal processing algorithms implemented in computer software or hardware on visual data comprised in said input video material to derive at least one descriptor value for each of a plurality of first descriptors for each of a plurality of said segments of the input video material;

user-interface means enabling a user to combine said descriptor values of said first descriptors in order to create descriptor values for at least one further descriptor;

user-interface means enabling a user to choose from among said first descriptors and/or said further descriptors one or more descriptors to be used for automatic segment selection;

user-interface means enabling a user to define or choose a segment selection rule to be used for automatic segment selection;

automatic selection means for using the defined or chosen selection rule and said descriptor values to select, from among the plurality of video segments, at least two said video segments of the input video material;

automatic sequencing means for using a sequencing rule and said descriptor values of said selected descriptors for at least two selected video segments to derive a sequencing order in which to present said at least two selected segments, said at least two selected segments being permuted in the sequencing order relative to the sequence of the at least two segments in the input video material;

assembly means for assembling an output video production by including the selected video segments in the sequencing order; and

playback means which plays said output production;
whereby a user may create and view different output productions by repeatedly applying different combinations of descriptors and selection rules.

2. (previously presented) The system as in claim 1, further including means for displaying at least one grid, each of said at least one grid having reference representations of the plurality of video segments for a first axis and at least one first descriptor corresponding to the plurality of video segments for a second axis, wherein each cell in said at least one grid displays a representation of at least one descriptor value ascribed to one of said at least one first descriptors corresponding to one of the plurality of video segments.

3. (previously presented) The system as in claim 2, wherein said at least one grid includes a plurality of rows, said plurality of rows including:
a row visually representing the plurality of video segments;
a row visually representing audio content of the plurality of video segments; and
a row providing time-series graphical representations of a plurality of descriptor values corresponding to one of the plurality of video segments,
wherein the temporal extent of each of the plurality of video segments is indicated in one of said plurality of rows.

4. (previously presented) The system as in claim 3, wherein said at least one grid further includes first and second grid, wherein when said input video material is input into said system, said first grid represents said input video material in substantially an original state and second grid represents said output video production, and a change to said first grid causes a corresponding change to said second grid.

5. (previously presented) The system as in claim 1, further including means for creating transitions between selected video segments.
6. (previously presented) The system as in claim 5, wherein said means for creating transitions includes means for creating video dissolves or audio cross fades between selected video segments.
7. (previously presented) The system as in claim 1, further comprising means for importing a descriptor from the input video material and ascribing at least one value for said imported descriptor to each segment of the input video material, wherein said at least one value is created prior to importation into said system.
8. (withdrawn)
9. (previously presented) The system as in claim 1, wherein said computerized digital signal processing means includes means for creating said at least one descriptor value for each video segment by assigning an ordinal number to each of the segments of the input video material in accordance with the position of the respective video segments in the plurality of segments of the input video material .
10. (previously presented) The system as in claim 1, wherein said computerized digital signal processing means includes means for ascribing said at least one descriptor value to each segment of the input video material by using a formula or algorithm having a reference to at least a second descriptor value.

Claims 11 to 14 (Withdrawn)

15. (previously presented) The system as in claim 1, further including means for segmenting an input video material into the plurality of video segments by enabling definition or adjustment of start and end times of a video segment by direct user manipulation.

16. (previously presented) The system of claim 1, further including means for deriving a single value from a plurality of temporally successive values of a descriptor corresponding to one of said plurality of video segments.

Claims 17 to 19 (Withdrawn)

20. (previously presented) The system as in claim 1, wherein said automatic selection means for selecting at least two video segments includes a selection rule which selects said at least two video segments according to whether said at least one descriptor value for each segment lies substantially within a range of target values.

Claim 21 (Canceled)

22. (previously presented) The system as in claim 1, wherein said automatic sequencing means for deriving a sequencing order comprises means for ordering said at least two selected video segments according to the difference between said at least one descriptor value for each respective selected video segment and a target value.

Claim 23 (Canceled)

24. (presently amended) A ~~computerized~~ method performed by a programmed computer for creating an output video production automatically from a body of input video material comprising multiple segments, the method including the steps of:

(a) automatically performing one or more digital signal processing algorithms implemented in the programmed computer ~~software or hardware~~ on visual data shot by a video camera and comprised in said input video material to derive at least one descriptor value for each of a plurality of first descriptors for each of a plurality of said segments of the input video material;

(b) receiving input from a user to combine said descriptor values of said first descriptors in order to create descriptor values for at least one further descriptor;

(c) receiving input from a user to choose from among said first descriptors and/or said further descriptors one or more descriptors to be used for automatic segment selection;

(d) receiving user input to define or choose a segment selection rule to be used for automatic segment selection;

(e) using a selection rule and said descriptor values to select, from among the plurality of video segments, at least two video segments;

(f) using a sequencing rule and said descriptor values of said at least two selected video segments to derive a sequencing order in which to present said at least two selected segments, said at least two selected segments being permuted in the sequencing order relative to the order of the at least two selected segments in the input video material, and

(g) assembling the output video production including the selected video segments in the sequencing order; and

(h) playing said output production to a user using a video display device; whereby a user may create and view different output productions by repeatedly applying different combinations of descriptors and selection rules, and then performing steps (e) to (h) again.

25. (previously presented) The method as in claim 24, further including the step of displaying at least one grid, each of said at least one grid having reference representations of the plurality of video segments for a first axis and at least one first descriptor corresponding to the plurality of video segments for a second axis, wherein each cell in said at least one grid displays a representation of at least one descriptor value ascribed to one of said at least one first descriptors corresponding to one of the plurality of video segments.

26. (previously presented) The method as in claim 25, wherein said step of displaying said at least one grid includes the step of displaying a plurality of rows, said plurality of rows including:

a row visually representing the plurality of video segments;

a row visually representing audio content of the plurality of video segments; and

a row providing time-series graphical representations of a plurality of descriptor values corresponding to one of the plurality of video segments,

wherein the temporal extent of each of the plurality of video segments is indicated in one of said plurality of rows.

27. (previously presented)The method as in claim 26, wherein said step of displaying said at least one grid includes the step of displaying first and second grids, wherein when the input video material is provided, said first grid represents the input video material in substantially an original state and said second grid represents said output video production, and a change to said first grid causes a corresponding change to said second grid.

28. (previously presented)The method as in claim 24, further including the step of creating transitions between said selected video segments.

29. (previously presented)The method as in claim 28, wherein said step of creating transitions includes the step of creating video dissolves or audio cross fades between said selected video segments.

30. (previously presented) The method as in claim 24, further including a step of importing from the input video material a descriptor and at least one value for said imported descriptor which is ascribed to each segment of the input video material wherein said at least one value is created prior to importation .

31. (withdrawn)

32. (previously presented) The method as in claim 24, wherein said step of performing one or more digital signal processing algorithms is performed by assigning an ordinal number to each of the segments of the input video material in accordance with the position of the respective video segments in the plurality of segments of the input video material .

33. (previously presented) The method as in claim 24, wherein said step of performing one or more digital signal processing algorithms is performed by ascribing said at least one descriptor value to each segment of the input video material by using a formula or algorithm having a reference to at least a second descriptor value.

Claims 34 to 37 (Withdrawn)

38. (previously presented) The method as in claim 24, including the further step performed before step (a) of segmenting the input video material into video segments by enabling definition or adjustment of start and end times of a video segment by direct user manipulation.

39. (previously presented) The method as in claim 24, including the further step of deriving a single value from a plurality of temporally successive values of a descriptor corresponding to one of said at least two video segments.

Claims 40 to 42 (Withdrawn)

43. (previously presented) The method as in claim 24, wherein said selection rule in said step (c) of selecting at least two video segments includes selecting said at least two video segments according to whether said at least one descriptor value for each segment lies substantially within a range of target values.

Claim 44 (Canceled)

45. (previously presented) The method as in claim 24, wherein said sequencing rule in said step (f) of deriving a sequencing order includes the step of ordering said at least two selected video segments according to the difference between said at least one descriptor value for each respective selected video segment and a target value.

Claim 46 (Canceled)

47. (previously presented) A computer program product for creating an output video production automatically from a body of input video material comprising multiple segments, said product including:

- a computer usable medium having computer readable program code means stored in said medium for processing said input video material, said computer program product having:

- computer readable program code means for performing one or more digital signal processing algorithms on visual data comprised in said input video material to obtain at least one descriptor value for each of a plurality of first descriptors for each of a plurality of segments of the input video material;

- computer readable program code means for generating a user interface enabling a user to combine said descriptor values of said first descriptors in order to create descriptor values for at least one further descriptor;

- computer readable program code means for generating a user interface enabling a user to choose from among said first descriptors and/or said further descriptors one or more descriptors to be used for automatic segment selection;

- computer readable program code means for generating a user interface enabling a user to define or choose a segment selection rule to be used for automatic segment selection;

- computer readable program code means for using a selection rule and said descriptor values to select, from among the plurality of video segments, at least two video segments;

- computer readable program code means for using a sequencing rule and said descriptor values of said at least two selected video segments to derive a sequencing order in which to present said at least two selected segments, said at least two selected segments being permuted in said sequencing order relative to the order of said at least two selected segments in the input video material, and

- computer readable program code means for assembling an output video production by including the selected video segments in the sequencing order; and

- computer readable playback code means for playing said output production;

whereby a user may create and view different output productions by repeatedly applying different combinations of descriptors and selection rules.

48. (previously presented)The product as in claim 47, further including computer readable program code means for displaying at least one grid, each of said at least one grid having referencee representations of the plurality of video segments for a first axis and said at least one first descriptor corresponding to the plurality of video segments for a second axis, wherein each cell in said at least one grid displays a representation of at least one descriptor value ascribed to one of said at least one first descriptors corresponding to one of the plurality of two video segments.

49. (previously presented)The product as in claim 47, wherein said computer readable program code means for display said at least one grid, includes computer readable program code means for displaying a plurality of rows, said plurality of rows including:

- a row visually representing the plurality of two video segments;
- a row visually representing audio content of the plurality of video segments; and
- a row providing time-series graphical representations of a plurality of descriptor values corresponding to one of the plurality of video segments,

wherein the temporal extent of each of the plurality of video segments is indicated in one of said plurality of rows.

50. (previously presented)The product as in claim 49, wherein said computer readable program code means for displaying said at least one grid further includes computer readable program code means for displaying first and second grids, wherein when the input video material is provided, said first grid represents said input video material in substantially an original state and second grid represents said output video production, and a change to said first grid causes a corresponding change to said second grid.

51. (previously presented) The product as in claim 47, further including computer readable program code means for creating transitions between selected video segments.
52. (previously presented) The product as in claim 51, wherein said computer readable program code means for creating transitions includes computer readable program code means for creating video dissolves or audio cross fades between selected video segments.
53. (previously presented) The product as in claim 47, further including computer readable program code means for importing a descriptor from the input video material and at least one value for said imported descriptor which is ascribed to each segment of the input video material, wherein said at least one value is created prior to importation.
54. (withdrawn)
55. (previously presented) The product as in claim 47, wherein said computer readable program code means for performing one or more digital signal processing algorithms includes computer readable program code means for creating said at least one descriptor value for each video segment by assigning an ordinal number in accordance with the position of the respective video segments in the plurality of segments of the input video material.
56. (previously presented) The product as in claim 47, wherein said computer readable program code means for performing one or more digital signal processing algorithms includes computer readable program code means for ascribing said at least one descriptor value to each segment of the input video material by using a formula or algorithm having a reference to at least a second descriptor value.

Claims 57 to 59 (Withdrawn)

60. (original) The product as in claim 47, wherein said computer readable program code means for segmenting includes computer readable program code means for identifying and representing a different set of video segments for each of said at least one descriptor.

61. (previously presented) The product as in claim 47, further including computer readable program code means for segmenting the input video material into the plurality of video segments by enabling definition or adjustment of start and end times of a video segment by direct user manipulation.

62. (previously presented) The product as in claim 47, further including computer readable program code means for deriving a single value from a plurality of temporally successive values of a descriptor corresponding to one of said plurality of video segments.

Claims 63 to 65 (Withdrawn)

66. (previously presented) The product as in claim 47, wherein said computer readable program code means for selecting said at least two video segments selection rules which select said at least two video segments according to whether said at least one descriptor value lie substantially within a range of target value.

Claim 67 (Canceled)

68. (previously presented) The product as in claim 47, wherein said computer readable program code means for deriving a sequencing order includes computer readable program code means for ordering said at least two selected video segments according to the difference between said at least one descriptor value for each respective selected video segment and a target value.

Claim 69 (Canceled)

Claims 70 to 99 (Cancelled)

100. (previously presented) The system as in claim 1, wherein said user-interface means enabling a user to choose or define a segment selection rule permits the user to choose the selection rule from a predefined set of selection rules.

101. (previously presented) The system as in claim 1, wherein said automatic sequencing means further includes means for choosing the sequencing rule from a predetermined set of sequencing rules.

102. (previously presented) The system as in claim 1, further including means for defining the segments of the input video material, said means including :

means for obtaining at least two time series descriptors in the form of time series data, each time series descriptor representing the value of a characteristic of the input video material at each of a series of successive time periods; and

means for using at least one of the time-series descriptors to derive a set of segment boundary times, the segment boundary times defining said segments of the input video material;

wherein said means for obtaining descriptor values automatically obtains at least one descriptor value for each of said segments of the input video material by using at least a second of the time series descriptors.

103. (previously presented) The system as in claim 1, wherein said computerized digital signal processing is operative to obtain a first said descriptor value for each of said segments; said system further including:

means for ascribing at least one second descriptor value to at least a first of said segments;

means for grouping said first segment with at least one other of the segments according to the values of said first descriptor value, and

means for selectively copying said second descriptor value to said one or more other segments.

104. (previously presented) The system as in claim 1, further comprising:
data input means for receiving instructions from the user to perform at least one of:
(i) incorporating additional descriptors; and
(ii) creating one or more further descriptors having descriptor values derived from previously-obtained descriptor values;
said automatic selection means said automatic sequencing means and said assembly means being arranged to generate a modified output production .

105. (previously presented) A system for creating an output video production from an input video material, the system comprising:
means for obtaining at least two time series descriptors in the form of time series data, each of said time series descriptors representing the value of a characteristic of the input video material at each of a series of successive time periods;
means for using at least one of the time-series descriptors to derive a set of segment boundary times, the segment boundary times defining a plurality of segments of the input video material;
means for applying a descriptor reduction rule to at least a second one of the time series descriptors to obtain automatically at least one segment descriptor for each of said segments of the input video material, the or each segment descriptor having a single value for each respective segment of the input video material;
means for using a selection rule and said descriptor values to select, from among the plurality of video segments, at least two segments; and
means for assembling the output video production including the selected video segments.

106. (previously presented) A method as in claim 24 in which step (d) includes choosing the selection rule from a predefined set of selection rules.

107. (previously presented) A method as in claim 24 including a further step of choosing the sequencing rule from a predetermined set of sequencing rules.

108. (previously presented) The method as in claim 24, including the further steps, performed before step (a), of defining the segments of the input video material by:

- obtaining at least two time series descriptors in the form of time series data, each time series descriptor representing the value of a characteristic of the input video material at each of a series of successive time periods;

- using at least one of the time-series descriptors to derive a set of segment boundary times, the segment boundary times defining said segments of the input video material; and

- said step (a), of obtaining at least one descriptor value for each said segments of the input video material, being performed automatically using at least a second of the time series descriptors.

109. (previously presented) A method according to claim 24 in which said step (a) of performing automatic signal analysis of said input video material to obtain at least one descriptor value for each of said segments of the input video material includes obtaining a first said descriptor value for each of said segments;
said method further including the steps of:

- ascribing at least one second descriptor value to at least a first of said segments;

- grouping said first segment with at least one other of the segments according to the values of said first descriptor value,

- selectively copying said second descriptor value to said one or more other segments.

110. (previously presented) A method according to claim 24 including, at least once, performing the further steps, after step (h), of:

- (i) receiving instructions from the user to perform at least one of:
incorporating additional descriptors; and
creating one or more further descriptors having descriptor values derived from previously-obtained descriptor values; and
- (j) repeating steps (e) to (h) to obtain a modified output production.

111. (presently amended) A computerized method performed by a programmed computer for creating an output video production from input video material shot by a video camera, the method including the steps of:

- (a) the programmed computer obtaining at least two time series descriptors in the form of time series data, each of said time series descriptors representing the value of a characteristic of the input video material at each of a series of successive time periods;
- (b) using at least one of the time-series descriptors to derive a set of segment boundary times, the segment boundary times defining a plurality of segments of the input video material;
- (c) applying a descriptor reduction rule to at least a second one of the time series descriptors to obtain automatically at least one segment descriptor for each of said segments of the input video material, the or each segment descriptor having a single value for each respective segment of the input video material; and
- (d) using a selection rule and said descriptor values to select, from among the plurality of video segments, at least two segments;
- (e) assembling the output video production including the selected video segments; and
- (f) playing the output video production to a user using a video display device.

112. (previously presented) The product as in claim 47, wherein said computer readable program code means for generating a user interface enabling a user to define or choose a segment selection rule permits a user to choose the selection rule from a predefined set of selection rules.

113. (previously presented) The product as in claim 47, wherein said computer readable program code means for deriving a sequencing order further includes computer readable program code means for choosing the sequencing rule from a predetermined set of sequencing rules.

114. (previously presented) The product as in claim 47, further comprising computer readable program code means for segmenting the input video material into the plurality of video segments, said means including

computer readable program code means for obtaining at least two time series descriptors in the form of time series data, each time series descriptor representing the value of a characteristic of the input video material at each of a series of successive time periods; and

computer readable program code means for means for using at least one of the time-series descriptors to derive a set of segment boundary times, the segment boundary times defining said segments of the input video material;

wherein said computer readable program code means for means for obtaining said descriptor values automatically obtains at least one descriptor value for each of said segments of the input video material by using at least a second of the time series descriptors.

115. (previously presented) The product as in claim 47, wherein said computer readable program code means for performing automatic material analysis of said input video material to obtain at least one descriptor value is operative to obtain a first said descriptor value for each of said segments;
said product further including:

computer readable program code means for ascribing at least one second descriptor value to at least a first of said segments;

computer readable program code means for grouping said first segment with at least one other of the segments according to the values of said first descriptor value, and

computer readable program code means for selectively copying said second descriptor value to said one or more other segments.

116. (previously presented) The product according to claim 47, further comprising computer readable program code means for performing at least once the further steps of: receiving instructions from the user to perform at least one of:

- (i) incorporating additional descriptors; and
- (ii) creating one or more further descriptors having descriptor values derived from previously-obtained descriptor values; and

using said computer readable program code means for selecting at least two video segments, deriving a sequencing order and assembling an output video production to obtain a modified output production.